



WHITE PAPER: The removal of total suspended solids and heavy metals from coal ash ponds requires dynamic filtration methods for compliance

Increased regulations from governing bodies now require extra attention from power plants when managing the coal ash disposal process. A recent ruling by the EPA provided a comprehensive set of requirements for the safe disposal of coal ash and was enacted to clean up faulty surface impoundments and establish recordkeeping and reporting requirements. The ruling forces power plants to adjust their project management solutions for the remediation of coal ash ponds.

TSS Removal

Mobile clarification, conventional media filtration, ultrafiltration and dewatering are utilized in the removal of Total Suspended Solids (TSS).

MPW provides highly mobile trailers for clarification purposes that feature on-board filtration storage. The dynamic system also has internal recirculation capabilities to prevent process interruptions. The equipment used for conventional media filtration is slightly different, but MPW's filtration systems offer multiple filter designs and capacities that can handle several media configurations.

Ultrafiltration is made easier by means of a fully automated system with continuous monitoring capabilities. These systems remove not only TSS, but also iron, manganese and other organic compounds.

Each of the above solutions will deal with dewatering of solid waste at some point throughout the process. MPW's geotubes offer an effective option for dewatering because there is little to no labor cost and no startup or shutdown time. Plate and frame presses also require low maintenance and are adaptable to many different materials. Of all the options for dewatering, they produce the driest end-product. Belt presses, another dewatering tool, can handle high volumes of

solids and can treat sludge from a clarifier directly without additional thickening. These tools offer a fast startup time and are well-suited for mobile applications.

Physical Chemical Treatment

While undergoing a dewatering process, water that is pulled off an ash pond can easily drag certain heavy metals along with it. To comply with regulations, power plants can more effectively remove these metals through chemical treatments. These treatments normally occur up front, likely during clarification. MPW manages heavy metals reduction in a variety of ways, including oxidation/reduction chemistry, organic and inorganic coagulants and flocculants, organic metal scavengers and pH adjustment.

One of MPW's signature services for reducing the presence of heavy metals is reverse osmosis. This process removes 99 percent of dissolved solids from water and can operate in both single-pass and double-pass mode. The reverse osmosis process is designed to reject heavy metals once the up-front equipment has dealt with TSS. This greatly reduces a plant's exposure to outflow citations by governing bodies.

If still there are metals remaining

in the effluent water after the reverse osmosis process takes place, mobile deionization services can be used. This practice can sometimes even be used if reverse osmosis is not an option. Mobile deionization trailers come equipped with up to 28 custom-configured ion exchange vessels and can handle flow rates up to 400 gpm.

In addition to reverse osmosis and mobile deionization, MPW offers specialty media applications that can treat water contaminated with heavy metals. These applications are designed to primarily reduce ions to their elemental form so they can be discharged from the water. Treatment options include ZVI (zero valence iron), a powder that oxidizes elemental iron to ferrous and ferric iron; activated alumina, which absorb selenium and are used for low concentrations of heavy metals; and other specialty resins.

The back-end treatment option for a microbiological treatment process employs a reactor with a pipe that feeds water into a tank of cultured bacteria designed to "eat" heavy metals. After the water passes through, the remaining residue of solids can be carried away by truck and disposed.

MPW has a unique capability to provide a complete solution for the safe and effective management of coal ash remediation projects.